EXPLORING FOR PLANTS IN THE SOUTHEASTERN STATES

By Dr. Edgar T. Wherry[1]

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One of the most pressing tasks of the plant geographer is to ascertain as fully as practicable the present distribution of the various kinds of plants over the surface of the earth, before civilized man succeeds in destroying all natural habitats and exterminating their occupants. While many manuals and floras give in a general way the ranges of such species as occur within the areas covered, accurate distributional data are at hand for very few. The lack of such information is especially serious in the case of plants endemic to the southeastern United States, where there has been so little collecting that the range of even conspicuous objects like the pitcher-plants is but imperfectly reflected by specimens in herbaria. I was accordingly especially glad to be invited by Mr. Louis Burk, the well-known Philadelphia horticulturist, to obtain for him a complete collection of the species and varieties of *Sarracenia*, in the summer of 1932. Not only would such a trip make it possible to fill in many gaps in the recorded ranges of these plants, but also there would be a chance to study in the field undescribed ones as to which more or less unsatisfactory data were at hand.

Late in June I drove to Washington, D.C. and was fortunate in having Mr. James E. Benedict, Jr., join me for the trip. Continuing southward on U.S. Route 1, our first stopping point was Raleigh, North Carolina, where we called on Professor Bertram W. Wells (who just recently died in 1979). He not only furnished us information as to pitcher-plant localities in the southern part of the state, but also showed us a tiny meadow not far from the city where by good fortune a few pitcher-plants still survived the encroachments of agriculture. Two species were represented, the widespread yellow pitcher-plant (*S. flava*) and a relative of the side-saddle pitcher-plant (*S. purpurea*), which we especially wished to study. In his "Autikon Botanikon," published in 1840, Rafinesque had pointed out what he considered specific differences between the northern and southern representatives of this species, and had named the southern one *S. venosa;* but his work has been ignored by all subsequent students of these plants. At this locality its aspect was certainly quite unlike that of the familiar pitcher-plant of New England and the Great Lakes region, and we felt disposed to accept Rafinesque's interpretation of it; but other occurrences seen in the course of the trip indicated the two to intergrade too much to be maintained as independent species. Additional data as to pitcher-plant localities were obtained from Professor William C. Coker at Chapel Hill, and we set out for central Georgia. At Macon we were joined by Dr. Charles C. Harrold for a two-day trip on the coastal plain of the state.

As we traveled southeast, pitcher-plants began to appear in the swamps in the vicinity of Swainsboro; these comprised not only the tall and conspicuous *Sarracenia flava*, but also the diminutive hooded (*S. minor*) and parrot pitcher-plant (*S. psittacina*). Michaux had reported the latter from "Augusta, Georgia, to Florida," and, desiring to obtain roots from as far north as possible, we kept searching for it in one county after another, but the most northern colony to be found lay 10 miles south of Millen and thus fully 50 miles south of Augusta. Several rooted clumps were collected, packed in wet moss, carried with us until we could find a state inspector and get them certified as pest-free, and then shipped home. Some of these were planted outdoors in a wild-life preserve controlled by Mr. Burk in southern New Jersey, where they have survived the first winter, at least. The remainder were held in a cool greenhouse, and bloomed freely during early spring.

Pitcher-plants were, however, not the only thing to claim our attention in this part of the country. We planned to make an effort to rescue a native tree which is on the verge of extinction. This plant, discovered by Stephen Elliott in the early 1800's and named in his honor *Elliottia* by Muhlenberg, is a primitive member of the heath family. The genus is monotypic, being represented by the single species *E. racemosa*, and its nearest relative is the genus *Tripetaleia* of Japan. These are evidently relics of the late Cretaceous and early Tertiary floras which spread widely over northern lands, but have been restricted by subsequent geological events, especially the Pleistocene glaciation, to remote isolated areas.

Showiest of all the species of *Sarracenia* is the white-top pitcher-plant, usually known technically as *S. drummondii*, although Rafinesque's name *S. leucophylla* has many years' priority. (It is now officially known as *S. leucophylla*). Amateur botanists have reported it

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to grow as far up as North Carolina, but the northernmost locality represented by specimens in herbaria is Americus, Georgia. After an hour's search in that vicinity we found in a swamp a small colony which, by a fortunate chance, had not been destroyed by cultivation. Here the stock of the species for Mr. Burk's collection was obtained, and although it is still too early to tell whether the clump planted outdoors in southern New Jersey will survive, those wintered over in the cool greenhouse have grown and bloomed well.

Another member of the genus does not grow east of Mobile, Alabama, so we traveled slowly toward that place, collecting various plants of interest along the way. The technical name of the species in question is *S. sledgei* (now known as *S. alata*) Macfarlane, and, as its flowers are lighter in color than those of any other species, it seems most aptly termed the pale pitcher-plant. This proved to occur in a number of swamps, and we soon had some plants ready to send off. Here we were so fortunate as to meet Mr. T. S. Van Aller, who not only inspected our plants and certified them as safe for shipment, but also guided us to several pitcher-plant meadows which we would not have found otherwise. In most of the localities draining, burning and other destructive activities of civilized man have greatly reduced the numbers of these plants, but one locality near Theodore proved to be still undisturbed. Here countless thousands of *S. sledgei* and *S. drummondii* grew together, along with a host of hybrids showing every conceivable gradation between and combination of the characters of the two parents. It seems a pity that there is no one in the region sufficiently interested in conservation to buy up this brief meadow and save it for investigation by geneticists and enjoyment by nature lovers of the future.

In April, 1910, while carrying on his fascinating studies of the relations between insects and pitcher-plants, Dr. Frank Morton Jones had spent some time at Theodore, and had observed in one nearby meadow a pink-flowered form of *S. venosa*. He had furnished us approximate directions as to its location, and we soon found what appeared to be the right spot. In July, of course, pitcher-plant petals are withered, but we dug a few plants and shipped them to Philadelphia in the hope that they might bloom in the greenhouse the following spring. This hope has now been realized; and it turned out that we had struck the right spot. The parts of the flower which in most pitcher-plants are green or bronzy — the bracts, sepals and style-umbrella — are in this one nearly white, while the petals have a lovely rose color, unlike that of any other *Sarracenia*.

In Chilton County we located a colony of a red-flowered pitcher-plant, but it was not in good enough condition to establish its identity, (now known as the newest species of *Sarracenia, S. alabamense* Case.) We then set out for the valley of the Little River east of Fort Payne, where a yellow-flowered one was reported. In spite of many hours' search in every conceivable type of habitat, we were unsuccessful in finding it there, but Dr. Harper had fortunately observed it, also, near Center. On reaching that place we found that, although recent clearing of the land for agriculture and burning over of the swamps, even where no such use was practicable, had nearly exterminated it, a few small clumps had somehow managed to escape destruction. Both in the field and in the greenhouse, where it bloomed the following spring, this plant showed a number of differences from its nearest relative, *S. flava,* and is to be classed as an independent species, (now known as *S. oreophila.*)

The mountains of North Carolina were our next objective, for there grows the red-flowered pitcher-plant known as *Sarracenia jonesii,* the distinctness of which had only been recognized in 1929. Its colonies proved to have been nearly destroyed by drainage of the swamps and by the raids of vandals from the towns, but enough remained to enable this species to be added to the collection. With it grew some beautifully veined *Sarracenia venosa.* Ordinarily, when two closely related species or varieties exist the more southern one tends to grow in the coastal plain, the more northern in the mountains; in this case, however, the southern representative grows both at low and high elevations. We also found hybrids between *S. venosa* and *S. jonesii.*

Leaving the mountains, we next drove to Charleston, South Carolina, where some of the specimens in the Elliott Herbarium, preserved at the Charleston Museum, were studied, and then made for Summerville. How abundant pitcher-plants formerly were here is well shown by the splendid photograph in Macfarlane's Monograph on the family in Engler's "Pflanzenreich"; but when we reached the spot where this had been taken, a very different sight met our eyes. Drainage of the swamps and burning of the woods had destroyed practically everything, and it was only after considerable search that we found even a single pitcher-plant in the midst of the rank, weedy grass and brush that had come in.

Three species of pitcher-plants remained to be collected at the northern-most margin of their range, so that they would be as hardy as possible. Eastern South Carolina proved, however, to be poor collecting ground, for droughts extending over a period of years had so lowered the water-table that many former

swamps were now dry land. Moreover, the local farmers had taken to planting crops in the lower areas, and many a time when we pushed through pine woods toward what should have been a *Sarracenia* bog we found only a *Zea Mays* (corn) or Gossypium (cotton) bog instead. *Sarracenia minor* was finally obtained in the neighborhood of Florence, South Carolina, and we then made for Lake Waccamaw, North Carolina. A few months before, Mr. Benedict had discovered here a northern outpost of the Florida swamp-fern, *Dryopteris floridana,* and of this we were able to obtain a good series of pressed specimens.

The sweet pitcher-plant, *S. rubra* eluded us for some time, but we finally located it in wet woods on the outskirts of Fayetteville, and roots were duly collected. Before leaving this part of the country, an attempt was made to obtain some of the remarkable little insectivorous plant, *Dionaea muscipula,* from a northern marginal occurrence, but the drought proved to have destroyed practically all of it, and only a very small clump could be obtained for planting out in the New Jersey preserve. Here it has survived the first winter, however, so there is some hope that it may become established there. The last pitcher-plant, *S. flava,* was obtained near New Bohemia, Prince Charles County, Virginia, and the series was complete.

News and Views

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In another normally drier field, *Dionaea* were smaller than usual and I also noticed *Pinguicula lutea* development was poor with several that had shriveled and died due to lack of water. Fortunately, it started raining later in the afternoon and would continue to do so for several days according to the forecast. The best surprise of the trip was locating my first natural hybrid *Sarracenia.* It was probably one that had *S. purpurea* as one parent and I'm not sure of the other parent. The plant is now doing fine in my greenhouse and in the two weeks since my return, it has already grown a new pitcher.

ROBERT SYRLIK (217 Drake Ave., Apt. 3J, New Rochelle, NY 10805) is trying to start a CP club in the greater New York City area. Subscribers who are interested are asked to write him at the above address or phone (914) 576-2423.

DAVID TAYLOR (The Everglades, 76, Crosslands Ave., Norwood Green, Southall, Middlesex UB2 5RA, GB) sent the following news about the 1979 Chelsea Flower Show and CP: "Well the fabulous Chelsea Flower Show is over for another year, and what a great success it was for CP. I have never quite experienced anything like the sheer spectacle that took place in that particular week. The CP society exhibit was so good, that I was personally told by members of the general public, that it was the talk of the show. This would account for the enormous numbers of people that surrounded the exhibit all that week. Members of the society were interviewed by the press and television media, and many of the fine plants on the stand were shown on British television. The whole subject of CP really took off, and the public interest brought a flood of new members to the society. I have never seen so many people scrambling to see our exhibit, and also trying to photograph the plants.

"One of the results of the show was the award of a RHS silver gilt medal to the CP society. This was indeed a very high honour and was certainly unexpected."

STEPHEN E. WILLIAMS recently attended the Tenth International Conference on Plant Growth Substances in Madison, Wisconsin on 22-26 July 1979, which had a section on plant movements. The following abstracts were forwarded to us by him as items of CP interest.

ACTION POTENTIALS AND RAPID PLANT MOVEMENTS. *Takao Sibaoka,* Biological Institute, Faculty of Science, Tohoku University, Sendai, 980 Japan.

When a transmitted (petiolar) action potential (AP) arrives at apical end of main pulvinus of *Mimosa* another type of AP is elicited here and spreads throughout the pulvinus within 0.1 sec. Rapid fall of leaf be-